

The Northern Miner

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THE AMERICA'S MINING NEWSPAPER

mine pours first gold names new zones of mineralization

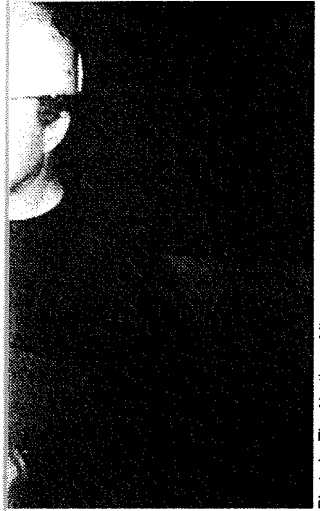


Photo by The Northern Miner

ly poured gold bar from the
ern Ontario.
de ore from the initial devel-
nt headings.
t of all, underground devel-
nt is showing signs that the
esource at Glimmer may be
than previously anticipated.
ly is a new zone of mineral-
n shaping up between the
a West and East zones, but a
carbonate zone is being
ected by the advancing ramp.
able reserves now stand at
0 tonnes grading an average
ams gold per tonne, all above
0-metre level. At the time of
s feasibility study, the reserve

stood at 500,000 tonnes grading 11.1 grams gold.
The gold pour came on the heels of a report that diamond drilling had expanded known mineralization (*T.N.M.*, March 31/97). The drilling, most of which was focused on the area between the deposit's West and East zones, has enabled Exall to confirm gold mineralization in a new Central zone. "This is something [former Glimmer President] George Kent anticipated right from the start," said Mine Manager Terence Byberg, who led *The Northern Miner* on a recent tour of the property.

Cut grades of intersections in the Central zone ranged from 3.5 to 18 grams gold over widths of 1.8 to 3.7 metres. But some narrow intersections yielded uncut grades as high as 207 grams (just over 6 oz. per ton), showing once again that, on a small scale, gold at Glimmer is erratically distributed.
More narrow, high-grade intersections showed up in the West zone, where some holes cut grades in the 100-to-400-gram range. Averaged over mining widths of at least 1.8 metres, grades ranged from 1.2 to 27.5 grams, with intersections up to 10.2 metres wide. "We've almost
See GLIMMER, Page 3

Is Bulyanhulu resource

the project, with the balance
y the Tanzanian government.
e 288 encountered a 1.6-
true-width interval grading
rams gold per tonne at a ver-
e of 1,082 metres. Prelimi-
results for two other deep
include a true width of 7.8
s grading 8.7 grams at a verti-
p of 905 metres in hole 277,
13-metre intercept at a depth
metres in hole 310.
sults are not yet available for
10.
ton is in the process of going

via a decline. The company has moved 35 metres of overburden to reach bedrock and expects to begin portal excavation before May. The underground development program will form the basis of a bankable feasibility study, scheduled for completion in early 1998.
In light of the latest drill results, the company is considering sinking a shaft prior to the delivery of the feasibility study. Sutton is more than adequately funded, with working capital of US\$33.8 million.
The Bulyanhulu deposit is a



Photo by The Northern Miner

Bruce Perry (left), Getty Copper's site manager, and Deborah McCombe of WGM examine core. To the right is geologist Victor Preto.

Getty Copper steps up pace at namesake project

BY ROB ROBERTSON
LOGAN LAKE, BRITISH COLUMBIA — The president of **Getty Copper** (GTY-T) doesn't need to do much arm-waving about the prospective nature of a land package that he has spent the past 25 years putting together. After all, Highland Valley Copper, one of the world's largest mining operations, is practically on its doorstep.
"We're in elephant country," John Lepinski told the *The Northern Miner* during a recent visit to the Getty property, which he hopes to develop into a minimum 100-million-tonne resource grading 0.45% copper.

the past-producing Bethlehem and Highland mines, and the undeveloped JA deposit. The area is well-served by highways and a railway, with ample water and power available.
The Getty property is host to two known copper deposits: the wholly owned Getty North, and Getty South, which is held under a 50% joint-venture option agreement between Getty Copper and privately owned Roak Industries.
The Getty North porphyry deposit is the focus of current drilling, which is aimed at expanding the reserve base and developing an open-pit model. Watts Griffis & McQuat has been overseeing the project for the past year and recently updated the resource estimate of Getty North to a drill-indicated 35 million tonnes grading 0.47% copper, including 7 million tonnes of oxide mineralization grading 0.6% copper.
The estimate is based on recent drilling up to, and including, hole 97-2, which intersected 264 metres averaging 0.35% copper (including 74 metres grading 0.67% copper). In 1996, Getty completed 39 drill holes totalling 9,835 metres at Getty North.
Drilling to date in 1997 has
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Under the direction of geological engineering consultant Watts Griffis & McQuat, Getty Copper has two diamond drill rigs operating as part of a \$3-million exploration program.
Situated 70 km southwest of Kamloops and 18 km west of the town of Logan Lake in south-central British Columbia, the Getty property comprises more than 165 sq. km of contiguous claims in the northern part of the Highland Valley camp.
The property is within 9 km of nine major copper porphyry deposits, including the currently

Getty Copper

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been confined to the southwestern extension of Getty North as the company works to upgrade an inferred sulphide resource to the drill-indicated status. At the time of our site visit, Getty Copper was in the process of completing holes 97-17 and 18.

Results have been reported for up to hole 97-13. Highlights include: 200 metres grading 0.32% copper from a drilled depth of 190 to 390 metres (including 72 metres grading 0.41% copper at 190 to 262 metres) in hole 97-5; 286 metres grading 0.32% copper from a depth of 212 to 498 metres (including 52 metres grading 0.71% copper at 220 to 272 metres) in hole 97-6; 41 metres grading 0.4% copper from 252 to 293 metres in hole 97-9 (the hole was lost in mineralization); 242 metres grading 0.33% copper from 182 to 424 metres (including 44 metres grading 0.79% copper at 358 to 402 metres) in hole 97-11; 114 metres grading 0.2% copper from 292 to 406 metres in hole 97-12; and 248 metres grading 0.28% copper from 92 to 340 metres (including 38 metres grading 0.47% copper at 102 to 140 metres), plus 26 metres grading 0.47% copper at 222 to 248 metres in hole 97-13.

Based on past drilling and underground sampling, Watts Griffiths & McOuat reports that the Getty South breccia deposit could contain a potential inferred resource of 36

million tonnes averaging 0.47% copper, including a higher-grade 400,000 tonnes of 1.5% copper.

During 1996, 13 drill holes totalling 3,236 metres tested Getty South, returning mixed results. Highlights included: 70 metres grading 0.52% copper from a drilled depth of 33 to 103 metres (including 18 metres grading 1.63% copper at 33 to 51 metres) in hole GS96-1; 32 metres grading 0.31% copper from 60 to 92 metres in hole GS96-3; 16 metres grading 0.31% copper from 187 to 203 metres in hole GS96-4; 16 metres grading 0.76% copper from 56.5 to 72.5 metres in hole GS96-6; 18 metres grading 0.33% copper from 136 to 154 metres in hole GS96-7; and 10 metres grading 0.44% copper from 231 to 241 metres in hole S-10.

Bruce Perry, a company geologist and site manager, reports that "sampling the deposit by core drilling has proved to be challenging due to the unusual mode of occurrence of the principal ore mineral, chalcocite, which is erratically distributed as very coarse grains contained only within the breccia's cryptocrystalline tourmaline-quartz cement."

Highland Valley

The five major porphyry copper-molybdenum deposits — Valley, Lornex, Bethlehem, Highmont and JA — lie within a 15-sq.-km area in Highland Valley in the central part of the Guichon batholith.

These copper deposits are associated with multiple phases of the

Upper Triassic Guichon Creek batholith, which intrude Triassic-age sedimentary and volcanic rocks and are locally overlain by Early Jurassic to Middle Tertiary-aged sedimentary and volcanic strata. Most of the deposits are related to porphyry stocks and dyke swarms closely associated with the north-trending Lornex fault and northwest-trending Highland Valley fault.

Mineralization occurs in fractures, veins, faults and breccias, with fracture density the most important factor influencing grade. The first mineralizing event in the batholith followed emplacement of the Bethlehem phase, which produced the Bethlehem deposits, Getty North and South, and several smaller deposits. The second mineralizing event followed the emplacement of the Bethsaida phase, the youngest major phase of the batholith. The Valley, Lornex, Highmont, JA and several smaller deposits developed at this time.

Highland Valley Copper is mining the Valley and Lornex deposits by open-pit methods, with the bulk of the ore coming from the Valley pit.

About 90.4 million tonnes of combined ore and waste were mined in 1996. Of that, 42.6 million tonnes were milled at an average grade of 0.396% copper and 0.006% molybdenum, for a daily throughput averaging 116,448 tonnes.

Mill recoveries averaged 91.2% for copper and 55.3% for moly, while the concentrate grade averaged 43% for copper and 53% for moly.

Total production contained in concentrates was 328 million lb. copper and 3.1 million lb. moly, plus 11,600 oz. gold and 1.8 million oz. silver. This compares with 348 million lb. copper and 3.5 million lb. moly, plus 12,800 oz. gold and 1.9 million oz. silver, in 1995.

A host of factors resulted in a 6% drop in throughput in 1996. Chief among these were: the relocation of the in-pit crushing and conveying system; grinding problems caused by harder ore; and modifications to the mining plan, as necessitated by a fault system in the northern wall of Valley pit. Operating costs rose to \$5.72 per tonne milled in 1996, compared with \$5.12 in the previous year.

Lower copper prices and output reduced Highland Valley's operating profit to \$102 million in 1996 from \$258 million in 1995. Revenues were down in 1996 to \$414 million from \$560 million in the previous year.

At year-end, reserves within the Valley and Lornex pits stood at 495 million tonnes grading 0.422% copper. An additional inferred reserve is estimated at 43 million tonnes grading 0.44% copper. Current reserves will allow for mining until the year 2008.

Drilling in 1995 outlined a possible resource of 200 million tonnes grading 0.4% copper beneath the current pit design of the Valley deposit. In its year-end review of mineral exploration in British Columbia, the Energy and Minerals division of the province's Geological Survey branch reported that this resource was further examined in 1996, resulting in an indicated resource of 350 million tonnes grading 0.384% copper. Its value and eco-

nomics will continue to be the subject of ongoing studies in 1997.

Highland Valley Copper is a 4-way partnership among: **Cominco** (CLF-T) with a 50% interest; **Rio Algom** (ROM-T) with 33.6%; **Teck** (TEK-T) with 13.9%; and **Highmont Mining** with 2.5%.

Highland Valley Copper also owns the JA deposit, which has been deemed uneconomic, as it is covered by extensive, saturated overburden in excess of 170 metres thick. In 1983, reserves were estimated at 286 million tonnes grading 0.43% copper and 0.017% moly in 1983.

Former producers Highmont and Bethlehem are closed. Highmont was an intermediate-size deposit, with reserves defined in two main zones totalling 123.1 million tonnes. During a brief production period from 1980 to 1984, a total of 34.7 million tonnes averaging 0.22% copper and 0.03% moly was mined at a stripping ratio of 1.53-to-1.

Bethlehem was in production from 1962 to 1982. Four smaller deposits — Huestis, East Jersey, Iona and Jersey — range in size from 1.4 to 76.1 million tonnes. Combined, they represent a total reserve of 136.6 million tonnes. Of that amount, 93.1 million tonnes grading 0.5% copper and 0.012 gram gold were mined at an average stripping ratio of 1.93-to-1.

Getty North and South

The Getty North and South deposits occur in the north-central part of the Guichon batholith, at a higher elevation than the neighboring deposits.

Getty North is hosted by predominantly quartz diorite of the Guichon phase and is cut by a ridge of younger quartz diorite along a series of fracture sets. Mineralization is associated with a dyke swarm and occurs in the shape of an inverted horseshoe, with a central zone of lower-grade mineralization that is displaced and controlled by intrusive contacts and faulting.

In terms of geological setting, Getty North is said to resemble the Bethlehem deposits. To date, it is defined over a 350-by-250-metre area and to a depth of 330 metres. It trends in a northwesterly-southeasterly direction and dips 50° to the southwest.

Lower-grade mineralization is dominated by chalcocite and pyrite. Bornite is evident with increasing grade. Oxidized mineralization covers the central and northern portions of the deposit, with depths reaching 100 metres. The weathered rock contains chalcocite, malachite, azurite, chrysocolla and occasionally native copper.

Supergene mineralization has been identified adjacent to the deposit's northeastern boundary.

Getty Copper is investigating the possibility of recovering cathode copper from the oxide mineralization through the use of heap leaching and solvent extraction-electrowinning. Preliminary leaching tests by the company's consulting metallurgist, Morris Beattie, suggest a copper recovery of 82.4% over a 120-day period.

Three recent HQ-size holes were drilled, principally to collect samples of the oxide mineralization for further metallurgical studies.

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Manhattan Minerals



Robert R. Stone

Robert Willis, Chairman & Chief Executive Officer of Manhattan Minerals Corp. is pleased to announce the appointment of Robert R. Stone to the Board of Directors. Mr. Stone has more than 20 years experience in the mining industry. He has spent the last 23 years at Cominco Ltd. where he was a director and, since 1980 was Vice-President Finance & Chief Financial Officer. Mr. Stone is a business consultant and corporate director. He is Chairman, Global Stone Corporation, is a Director, Union Bank of Switzerland (Canada) and serves on the Board of Directors of Junior Achievement of Canada.



Sutton

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quartz-sulphide shear-vein (reef) system hosted in a greenstone belt in the Lake Victoria goldfields.

The main Reef 1 system, comprising Reefs 1 and 0, is a classic stratatound deposit occurring in a sedimentary exhalative unit at the contact of intermediate and felsic volcanics.

Reef 2 is 500 metres northeast of Reef 1 and consists of a series of *en echelon* vein structures in sheared intermediate volcanics.

Sutton has received an updated resource estimate for Bulyanhulu from an independent engineering consultant, incorporating 40 additional infill holes and two of the most recent deep holes.

The new resource estimate is calculated at 13.4 million tonnes grading 13.01 grams, compared with the previous estimate of 10.5 million tonnes grading 14.92 grams. The contained *in situ* resource stands at 5.6 million oz. — an increase of 580,000 oz. over the previous estimate.

The estimate is based on a cutoff grade of 5 grams over a minimum width of 1.5 metres.

The bulk of the resource is contained in the Reef 1 system, which has an average true thickness of 4.4 metres.

At the annual meeting, shareholders voted in favor of a 2-for-1 stock split, which will increase the number of shares outstanding to 28

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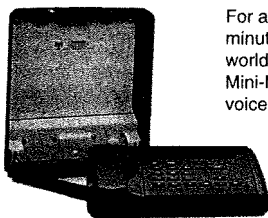
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TYX's data returned higher gold and copper grades in individual resource

targets. Underground, early development is

tion, with copious visible gold, as *The Northern Miner* observed.

Mine geologist Mahmoud Hasan is enthusiastic about the unit's potential as an ore host, saying, "I'm sure we'll find that the rest of the veins in the green carbonate are as spectacular as this"

Production at Glimmer is also important for St Andrew, whose mill had been closed since early 1995. With several prospects of its own, St Andrew will be able to generate cash flow by custom milling the Glimmer ore, enabling it to finance exploration and development on an extensive land holding west of Matheson.

At full production, the operation is expected to turn out 65,000 oz. gold annually, at a cash cost of between US\$220 to US\$250.

Meanwhile, the partners have referred an ownership dispute to the courts. The dispute refers to Hemlo Gold Mines' decision to withdraw from the project, leaving Glimmer with minimal cash resources. In January, **Matachewan Consolidated Mines (MATN-C)** took over control of Glimmer, and its interest now stands at 34.5%. Exall, with the remaining interest, contends that it had a right of first refusal on the control block of Glimmer. Both parties placed the dispute in court in March. In a public statement, Exall said "mine operations and production will not be in any way affected by these proceedings," and there was no sign of tension between the principals as they inspected the mine's first gold bar.

Getty Copper

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Tests on the primary sulphide zone indicate that a concentrate grading in excess of 35% copper could be achieved, with a copper recovery rate of about 87%.

Getty South is a breccia-hosted deposit, just east of a major, north-striking regional fault. Elliptical in shape, it measures 550 by 275 metres, and Perry said the magnitude of brecciation is unique to the area.

The deposit is hosted in Guichon quartz diorite, intruded by dacite and quartz diorite porphyritic dykes, and is cut by widespread faulting.

While exploration on the Getty property dates back to the turn of the century, the bulk of the exploration activity has taken place since the early 1950s. Getty North has, since 1956, been drilled by nine different companies. A total of 192 holes comprising 27,000 metres of drilling was completed up to April 8, 1996. Getty South has seen 16,000 metres of drilling and 1,800 metres of underground development by previous operators.

Past work on Highland Valley deposits has demonstrated that induced-polarization (IP) surveys are the most effective tool for locating copper-moly mineralization. Large, moderate-intensity chargeability anomalies were outlined over the Valley and Lornex deposits, and a weak, but distinct, anomaly was outlined over the Highmont deposits. Bethlehem's Jersey and East Jersey deposits were defined by a moderate anomaly.

Perry says soil geochem sampling of the B horizon shows good correlation of anomalous copper, iron and molybdenum values, with underlying mineralization.

In 1995 and 1996, Getty Copper carried out geophysical and geochemical programs, which revealed eight large IP chargeability anomalies and five copper-in-soil anomalies, some of which coincided with the geophysical anomalies.

An area 500 metres south of the Getty North deposit was tested by exploratory drilling late last year. The target was a high-chargeability anomaly coinciding with a substantial soil anomaly. Hole 96-34 intersected a 12-metre interval grading 0.25% copper and a 26-metre interval grad-

ing 0.1% copper.

In late 1996, follow-up IP and magnetometer surveys within the North Valley and Glossie grid areas revealed four new partially defined IP anomalies.

At the Glossie area, two large chargeability anomalies with low resistivity are associated with surface showings of sulphide copper. Within the North Valley area of the property, two IP anomalies, measuring 1,500 by 700 metres and 2,200 metres in diameter, were detected.

The grids in both areas are being extended for further geophysical surveying. Geochemical sampling and geological mapping will begin in both grid areas as soon as weather permits.

In the late part of the 1996 and early 1997, Getty Copper staked an additional 600 mineral claim units to the west and northwest.

Last fall, the company entered into a joint-venture option agreement with **Globe Resources (GBS-V)** on the 1.4-sq.-km Transvaal property, immediately west of the Getty North area.

Getty Copper can earn a half interest by spending \$525,000 on exploration over a 3-year period.

A large, 1-km-wide chargeability anomaly trends on to the northern portion of the property, which is marked by historic underground workings.

In 1996, nine holes were drilled into the western portion of the area. No significant results were reported, though Perry said the holes encountered both oxide and sulphide copper mineralization.

The proposed \$3-million exploration budget for 1997 will include 16,000 metres of drilling, 140 line km of IP and magnetic geophysical surveys, geochemical soil sampling, geological mapping, base-line environmental studies and metallurgical testing.

The bulk of the drilling will be directed on the Getty North and South deposits. Various geophysical and geochemical targets in the Transvaal, Getty West, Glossie and North Valley areas will also be drill-tested.

Getty Copper has more than \$4 million in working capital, with approximately 23 million shares outstanding, or 31 million fully diluted.



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